UNION END MILLS

DOUBLE END
SINGLE END
BALL END

Spiral Flutes Ground Concave with Double Relief

CABLE ADDRESS, UNDRILL ATHOL
CODES, LIEBERS, WESTERN UNION

STORES WITH COMPLETE STOCKS

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CHICAGO	11 South Clinton Street
DETROIT	6540 Antoine Street
SAN FRANCISCO	121 Second Street
LOS ANGELES	524 East Fourth Street
SEATTLE	568 First Ave. South

UNION TWIST DRILL COMPANY

ATHOL, MASSACHUSETTS, U. S. A.

JANUARY 1, 1942

Double-End End Mills

WITH FOUR FLUTES

HIGH SPEED STEEL

These end mills are Standard with either right or left-hand cut. Right-hand mills have right-hand spiral flutes and left-hand mills have left-hand spiral flutes.

Catalog No.	Dimensions—Inches				Price Each High Speed Steel
	Diam. of Mill	Diam. of Shank	Length of Flutes	Whole Length	
D100	1/8	3/8	3/8	3 1/8	$2.75
D101	5/32	3/8	7/16	3 1/4	2.75
D102	3/16	3/8	1/2	3 1/4	2.75
D103	7/32	3/8	9/16	3 1/4	2.75
D104	1/4	3/8	5/8	3 3/8	2.75
D105	9/32	3/8	11/16	3 3/8	2.75
D106	5/16	3/8	3/4	3 3/8	2.75
D107	11/32	3/8	3/4	3 3/8	2.75
D108	3/8	3/8	3/4	3 3/8	2.75
D109	13/32	1/2	1	4 1/8	3.50
D110	7/16	1/2	1	4 1/8	3.50
D111	15/32	1/2	1	4 1/8	3.50
D112	1/2	1/2	1	4 1/8	3.50
D113	9/16	5/8	1 3/8	5	4.30
D114	5/8	5/8	1 3/8	5	4.30
D115	11/16	3/4	1 5/8	5 5/8	5.25
D116	3/4	3/4	1 5/8	5 5/8	5.25
D117	13/16	7/8	1 7/8	6 1/4	6.25
D118	7/8	7/8	1 7/8	6 1/4	6.25
D119	15/16	1	1 7/8	6 1/2	7.25
D120	1	1	1 7/8	6 1/2	7.25

Small Diameter Double-End End Mills

WITH FOUR FLUTES

HIGH SPEED STEEL

These end mills are Standard with right-hand cut and right-hand spiral flutes.

Catalog No.	Dimensions—Inches				Price Each High Speed Steel
	Diam. of Mill	Diam. of Shank	Length of Flutes	Whole Length	
D125	3/32	3/16	5/16	2 1/4	$2.25
D126	1/8	3/16	3/8	2 1/4	2.25
D127	5/32	3/16	7/16	2 1/4	2.25
D128	3/16	3/16	1/2	2 1/4	2.25

Double-End End Mills

WITH TWO FLUTES

HIGH SPEED STEEL

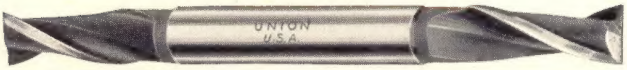
These end mills are Standard with either right or left-hand cut. Right-hand mills have right-hand spiral flutes and left-hand mills have left-hand spiral flutes.

Catalog No.	Dimensions—Inches				Price Each High Speed Steel
	Diam. of Mill	Diam. of Shank	Length of Flutes	Whole Length	
D135	1/8	3/8	3/8	3	$2.75
D136	3/16	3/8	7/16	3	2.75
D137	1/4	3/8	1/2	3	2.75
D138	5/16	3/8	9/16	3	2.75
D139	3/8	3/8	9/16	3	2.75
D140	7/16	1/2	13/16	3 3/4	3.50
D141	1/2	1/2	13/16	3 3/4	3.50
D142	9/16	5/8	1 1/8	4 1/2	4.30
D143	5/8	5/8	1 1/8	4 1/2	4.30
D144	11/16	3/4	1 5/16	5	5.25
D145	3/4	3/4	1 5/16	5	5.25
D146	13/16	7/8	1 9/16	5 1/2	6.25
D147	7/8	7/8	1 9/16	5 1/2	6.25
D148	15/16	1	1 5/8	5 7/8	7.25
D149	1	1	1 5/8	5 7/8	7.25

Small Diameter Double-End End Mills

WITH TWO FLUTES

HIGH SPEED STEEL

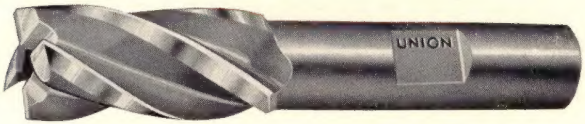


These end mills are Standard with right-hand cut and right-hand spiral flutes.

Catalog No.	Dimensions—Inches				Price Each High Speed Steel
	Diam. of Mill	Diam. of Shank	Length of Flutes	Whole Length	
D155	1/16	3/16	7/32	2 1/4	$2.25
D156	3/32	3/16	5/16	2 1/4	2.25
D157	1/8	3/16	3/8	2 1/4	2.25
D158	5/32	3/16	7/16	2 1/4	2.25
D159	3/16	3/16	1/2	2 1/4	2.25

Single-End End Mills

HIGH SPEED STEEL



These end mills are Standard with right-hand cut and right-hand spiral flutes. Flatted on shank. Mills 7/8" diameter and larger have an additional flat on the end of the shank to fit Pin Drive Holder.

Catalog No.	Dimensions—Inches				No. of Flutes	Price Each High Speed Steel
	Diam. of Mill	Diam. of Shank	Length of Flutes	Whole Length		
S10	1/8	3/8	3/8	2 5/16	4	$ 1.75
S11	3/16	3/8	1/2	2 3/8	4	1.75
S12	1/4	3/8	5/8	2 1/2	4	1.75
S13	5/16	3/8	3/4	2 1/2	4	1.75
S14	3/8	3/8	3/4	2 1/2	4	1.75
S15	7/16	3/8	1	2 11/16	4	2.00
S16	1/2	3/8	1	2 11/16	4	2.00
S17	1/2	1/2	1 1/4	3 1/4	4	2.25
S18	9/16	1/2	1 3/8	3 3/8	4	2.50
S19	5/8	1/2	1 3/8	3 3/8	4	2.70
S20	11/16	1/2	1 5/8	3 5/8	4	3.00
S21	3/4	1/2	1 5/8	3 5/8	4	3.15
S22	5/8	5/8	1 5/8	3 3/4	4	2.85
S23	11/16	5/8	1 5/8	3 3/4	4	3.00
S24	3/4	5/8	1 5/8	3 3/4	4	3.15
S25	13/16	5/8	1 7/8	4	4	3.70
S26	7/8	5/8	1 7/8	4	4	3.70
S27	15/16	5/8	1 7/8	4	4	4.05
S28	1	5/8	1 7/8	4	4	4.05
S29	7/8	7/8	1 7/8	4 1/8	4	3.80
S30	15/16	7/8	1 7/8	4 1/8	4	4.20
S31	1	7/8	1 7/8	4 1/8	4	4.20
S32	1 1/8	7/8	2	4 1/4	6	5.85
S33	1 1/4	7/8	2	4 1/4	6	6.40
S34	1	1	2	4 1/2	4	4.40
S35	1 1/8	1	2	4 1/2	6	6.10
S36	1 1/4	1	2	4 1/2	6	6.60
S37	1 3/8	1	2	4 1/2	6	7.20
S38	1 1/2	1	2	4 1/2	6	8.00
S39	1 1/4	1 1/4	2	4 1/2	6	6.60
S40	1 1/2	1 1/4	2	4 1/2	6	8.00
S41	1 5/8	1 1/4	2	4 1/2	6	8.75
S42	1 3/4	1 1/4	2	4 1/2	6	9.90
S43	1 7/8	1 1/4	2	4 1/2	6	10.30
S44	2	1 1/4	2	4 1/2	8	11.50

Long Single-End End Mills

HIGH SPEED STEEL

These end mills are Standard with right-hand cut and right-hand spiral flutes. Flatted on shank. Mills 7/8" diameter and larger have an additional flat on the end of the shank to fit Pin Drive Holder.

Catalog No.	Dimensions—Inches					Price Each High Speed Steel
	Diam. of Mill	Diam. of Shank	Length of Flutes	Whole Length	No. of Flutes	
S50	1/4	3/8	1 1/4	3 1/8	4	$ 2.00
S51	5/16	3/8	1 3/8	3 1/8	4	2.00
S52	3/8	3/8	1 1/2	3 1/4	4	2.00
S53	7/16	1/2	1 3/4	3 3/4	4	2.50
S54	1/2	1/2	2	4	4	2.55
S55	5/8	5/8	2 1/2	4 5/8	4	3.30
S56	3/4	3/4	3	5 1/4	4	4.00
S57	7/8	7/8	3 1/2	5 3/4	4	4.70
S58	1	1	4	6 1/2	4	5.90
S59	1 1/8	1	4	6 1/2	6	7.80
S60	1 1/4	1	4	6 1/2	6	8.70
S61	1 1/2	1	4	6 1/2	6	10.80
S62	1 1/4	1 1/4	4	6 1/2	6	8.70
S63	1 1/2	1 1/4	4	6 1/2	6	10.80

Extra Long Single-End End Mills

HIGH SPEED STEEL

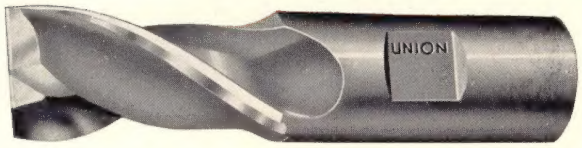
These end mills are Standard with right-hand cut and right-hand spiral flutes. Flatted on shank. Mills 7/8" diameter and larger have an additional flat on the end of the shank to fit Pin Drive Holder.

Catalog No.	Dimensions—Inches					Price Each High Speed Steel
	Diam. of Mill	Diam. of Shank	Length of Flutes	Whole Length	No. of Flutes	
S70	1/4	3/8	1 3/4	3 1/2	4	$ 2.20
S71	5/16	3/8	2	3 3/4	4	2.25
S72	3/8	3/8	2 1/2	4 1/4	4	2.40
S73	1/2	1/2	3	5	4	3.00
S74	5/8	5/8	4	6 1/8	4	4.05
S75	3/4	3/4	4	6 1/4	4	4.60
S76	7/8	7/8	5	7 1/4	4	5.70
S77	1	1	6	8 1/2	4	7.20
S78	1 1/4	1 1/4	6	8 1/2	6	10.90

Single-End End Mills

WITH TWO FLUTES

HIGH SPEED STEEL



These end mills are Standard with right-hand cut and right-hand spiral flutes. Flatted on shank. Mills 7/8" diameter and larger have an additional flat on the end of the shank to fit Pin Drive Holder.

Catalog No.	Dimensions—Inches				Price Each High Speed Steel
	Diam. of Mill	Diam. of Shank	Length of Flutes	Whole Length	
S130	1/8	3/8	3/8	2 3/8	$ 1.90
S131	3/16	3/8	3/8	2 3/8	1.90
S132	1/4	3/8	1/2	2 3/8	1.90
S133	5/16	3/8	9/16	2 3/8	1.90
S134	3/8	3/8	5/8	2 3/8	1.90
S135	7/16	3/8	13/16	2 1/2	2.15
S136	1/2	3/8	13/16	2 1/2	2.15
S137	1/2	1/2	1	3	2.40
S138	9/16	1/2	1 1/8	3 1/8	2.65
S139	5/8	1/2	1 1/8	3 1/8	2.90
S140	11/16	1/2	1 5/16	3 5/16	3.15
S141	3/4	1/2	1 5/16	3 5/16	3.30
S142	5/8	5/8	1 5/16	3 7/16	3.00
S143	11/16	5/8	1 5/16	3 7/16	3.15
S144	3/4	5/8	1 5/16	3 7/16	3.30
S145	13/16	5/8	1 1/2	3 5/8	3.90
S146	7/8	5/8	1 1/2	3 5/8	3.90
S147	15/16	5/8	1 1/2	3 5/8	4.30
S148	1	5/8	1 1/2	3 5/8	4.30
S149	7/8	7/8	1 1/2	3 3/4	3.90
S150	15/16	7/8	1 1/2	3 3/4	4.30
S151	1	7/8	1 1/2	3 3/4	4.30
S152	1 1/8	7/8	1 5/8	3 7/8	6.35
S153	1 1/4	7/8	1 5/8	3 7/8	6.85
S154	1	1	1 5/8	4 1/8	4.65
S155	1 1/8	1	1 5/8	4 1/8	6.50
S156	1 1/4	1	1 5/8	4 1/8	7.10
S157	1 3/8	1	1 5/8	4 1/8	7.75
S158	1 1/2	1	1 5/8	4 1/8	8.60
S159	1 1/4	1 1/4	1 5/8	4 1/8	7.10
S160	1 1/2	1 1/4	1 5/8	4 1/8	8.60
S161	1 5/8	1 1/4	1 5/8	4 1/8	9.40
S162	1 3/4	1 1/4	1 5/8	4 1/8	10.60
S163	1 7/8	1 1/4	1 5/8	4 1/8	11.50
S164	2	1 1/4	1 5/8	4 1/8	12.60

Long Single-End End Mills

WITH TWO FLUTES

HIGH SPEED STEEL

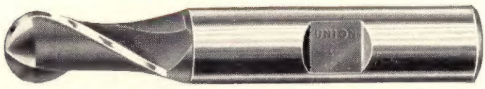
These end mills are Standard with right-hand cut and right-hand spiral flutes. Flatted on shank. Mills 7/8" diameter and larger have an additional flat on the end of the shank to fit Pin Drive Holder.

Catalog No.	Dimensions—Inches					Price Each High Speed Steel
	Diam. of End Mill	Diam. of Shank	Length Below Shank	Length of Cutting Edge	Total Length	
S165	1/4	3/8	1 1/2	5/8	3 1/16	$2.25
S166	5/16	3/8	1 3/4	3/4	3 5/16	2.40
S167	3/8	3/8	1 3/4	3/4	3 5/16	2.40
S168	1/2	1/2	2 1/4	1	4 1/16	3.00
S169	5/8	5/8	2 3/4	1 3/8	4 11/16	3.65
S170	3/4	3/4	3 3/8	1 5/8	5 7/16	4.60
S171	7/8	7/8	4	2	6 1/16	5.60
S172	1	1	5	2 1/2	7 5/16	7.25
S173	1 1/4	1 1/4	5	3	7 5/16	9.00

Ball-End End Mills

WITH TWO FLUTES

HIGH SPEED STEEL



These end mills are Standard with right-hand cut and right-hand spiral flutes. Flatted on shank. Mills 7/8" diameter and larger have an additional flat on the end of the shank to fit Pin Drive Holder.

Catalog No.	Dimensions—Inches				Price Each High Speed Steel
	Diam. of Mill	Diam. of Shank	Length of Flutes	Total Length	
B10	1/8	3/8	3/8	2 1/4	$ 2.20
B11	3/16	3/8	1/2	2 3/8	2.30
B12	1/4	3/8	5/8	2 1/2	2.30
B13	5/16	3/8	3/4	2 9/16	2.50
B14	3/8	3/8	3/4	2 9/16	2.50
B15	7/16	1/2	1	3 1/16	3.00
B16	1/2	1/2	1	3 1/16	3.00
B17	5/8	5/8	1 3/8	3 9/16	3.80
B18	3/4	3/4	1 5/8	3 15/16	4.40
B19	7/8	7/8	2	4 5/16	5.30
B20	1	1	2 1/4	4 13/16	6.30
B21	1 1/8	1	2 1/4	4 13/16	7.10
B22	1 1/4	1 1/4	2 1/2	5 1/16	8.20
B23	1 3/8	1 1/4	2 1/2	5 1/16	9.00
B24	1 1/2	1 1/4	2 1/2	5 1/16	10.00

Union Twist Drill Co.

ATHOL, MASSACHUSETTS · U. S. A.

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A6